

Docket No.: 13111-00038-US1
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Rainer Papp et al.

Application No.: 10/576,282

Confirmation No.: 1949

Filed: April 19, 2006

Art Unit: 1626

For: **STABILIZATION OF
HYDROFORMYLATION CATALYSTS
BASED ON PHOSPHORAMIDE LIGANDS**

Examiner: J. M. Nolan

PRE-APPEAL BRIEF REQUEST FOR REVIEW

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

INTRODUCTORY COMMENTS

Further to the Office Action dated September 22, 2010 finally rejecting claims 2-8, 10-14, and 16-22 under 35 U.S.C. §103(a) as being unpatentable over the article in Eur. J. Org. Chem. 2001, 3871-3877 to Jackstell et al. in view of WO 02/083695 to Ahlers et al., as evidenced by its counterpart US Patent No. 7,173,138, US Patent No. 5,731,472 to Leung et al., US Patent No. 4,567,306 to Dennis et al., US Patent No. 4,260,828 to Morrell et al., US Patent No. 4,283,562 to Billig et al., the article “Rhodium Catalyzed Hydroformylation” in chapter 9 of volume 22 of “Catalysis by Metal Complexes” to van Leeuwen, the article in J. Am. Chem. Soc. 1995, 117, 7696-7710, to Trzeciak et al., and the article in Tetrahedron Lett. 1997, 38(42), 7337-7340, to Xu et al., the Review Panel is respectfully requested to review the legal and factual basis of the rejection prior to the filing of an appeal brief in light of the following remarks.

REMARKS

Claims 2-8, 10-14, and 16-22 are rejected under 35 USC §103(a) as being unpatentable over the article in Eur. J. Org. Chem. 2001, 3871-3877 to Jackstell et al. in view of WO02/083695 to Ahlers et al., as evidenced by its counterpart US Patent No. 7,173,138, US Patent No. 5,731,472 to Leung et al., US Patent No. 4,567,306 to Dennis et al., US Patent No. 4,260,828 to Morrell et al., US Patent No. 4,283,562 to Billig et al., the article “Rhodium Catalyzed Hydroformylation” in chapter 9 of volume 22 of “Catalysis by Metal Complexes” to van Leeuwen, the article in J. Am. Chem. Soc. 1995, 117, 7696-7710, to Trzeciak et al., and the article in Tetrahedron Lett. 1997, 38(42), 7337-7340, to Xu et al.

Independent claim 13 recites, among other features, bringing the fluid into contact with at least one base selected from trialkyl amines, dialkyaryl amines, alkyldiaryl amines, triaryl amines, and bases immobilized on a solid phase, or a combination thereof. Similar subject matter is recited in independent claims 21 and 22. At least these features cannot reasonably be considered to be suggested by the applied citations.

Applicants previously discussed in great detail the unexpected results that have been achieved with the claimed subject matter. The Office Action states, at page 2, paragraph 2, lines 3-4 “that this may be true.” The Office Action, however, does not assess the persuasiveness of Applicants’ arguments at one instance. Instead, the Office Action merely asserts that unexpected results are not dispositive in regard to a conclusion of non-obviousness.

As set forth in MPEP 716.02 (a) II, the superiority of a property shared with the prior art is evidence of nonobviousness. In particular, “[e]vidence of unobvious or unexpected advantageous properties, such as superiority in a property the claimed compound shares with the prior art, can rebut *prima facie* obviousness. ‘Evidence that a compound is unexpectedly superior in one of a spectrum of common properties . . . can be enough to rebut a *prima facie* case of obviousness.’” It is unclear why in this case unexpected results are considered to be insufficient to rebut the assertion in the Office Action that the instant claims are obviousness, in particular when Applicants’ arguments are not even discussed.

Thus, the Office Action failed to assess the persuasiveness of Applicants' presentation of unexpected results. As such, the Office Action failed to answer all asserted advantages, as set forth in MPEP 707.07(f).

In particular, this failure to answer the substance of Applicants' arguments renders the Office Action incomplete as to all matters, as is required by 37 C.F.R. § 1.104(b). Further, MPEP § 707.07(f) states that “[i]n order to provide a complete application file history and to enhance the clarity of the prosecution history record, an examiner must provide clear explanations of all actions taken by the examiner during prosecution of an application”. “Where the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the applicant's argument and answer the substance of it.” “The examiner must address all arguments which have not already been responded to in the statement of the rejection” (MPEP § 707.07(f), Examiner Note 1).

Remarkably, the Office Action states, at page 13, lines 11-12, that “the specification fails to produce evidence of unexpected results.” Thus, not only did the Office Action fail to provide a clear explanation, but also provides contradictory remarks.

The Office Action states that it is known to employ catalysts with phosphoramidite ligands for hydroformylation processes, as described by Jackstell or Ahlers. Incidentally, Jackstell mentions at page 3871, right column, second paragraph that because of the limited stability of known sterically hindered chelating phosphites there is interest in new hydroformylation catalysts. This does of course only mean that the new ligands should be stable and not that there is a demand for new additives to improve the stability of such ligands. The main concern of Jackstell is the regioselectivity of the ligands and not a method to improve their stability. Thus, a person of ordinary skill in the art would not rely on Jackstell or Ahlers as a starting point to provide a new method to improve the stability of phosphoramidite ligands.

Leurig suggests the stabilization of organopolyphosphite ligand complex catalysts, which can be employed in a hydroformylation with heterocyclic nitrogen compounds. Phosphoramidite ligands and phosphite ligands are structurally different and it was not obvious for a person skilled in the art to employ the nitrogen compounds of claim 21 of the above-identified patent application for the stabilization of phosphoramidite ligands. Moreover, as taught at page 5, lines

9-19, of Applicants' disclosure, it is surprising that those catalysts can be stabilized with bases against degradation of the ligands or deactivation of the catalysts as the ligands themselves already contain more or less basic nitrogen-containing groups. This could not have been expected in view of the teaching of Leung, as the phosphite ligands disclosed in this document do not contain any basic groups and the employed heterocycles are also different from the bases used according to the instant claims.

Dennis suggests a hydroformylation process with a catalyst on the basis of known cyclic phosphite ligands that are already mentioned in Jackstell as having limited stability. However, there is no incentive for the skilled artisan employ tertiary amines in the method of Dennis to stabilize phosphoramidite ligands.

Moreover, Dennis suggests the stabilization of a ligand that is known for its limited stability and which is structurally far remote from the phosphoramidite ligands according to claim 21.

What is more, Dennis, suggests, at col. 4, lines 52-54, that base plays no further role in halogen ligand containing catalysts once the base has caused an inhibition period to disappear. Thus, a skilled artisan learns from Dennis that going to a different catalyst system does not necessarily retain the benefits of employing triethylamine with phosphite ligands.

Further, the Office Action applies Leung for suggesting the use of base as a means to stabilize hydroformylation catalysts. Leung suggests free heterocyclic nitrogen compounds, such as the illustrative diazole compounds at col. 30, lines 18-40. However, claim 21 recites trialkyl amines, dialkyl aryl amines, alkyl diaryl amines, triaryl amines, and bases immobilized on a solid phase, but does not recite free heterocyclic nitrogen compounds. Moreover, Leung suggests phosphite ligands, but fails to suggest phosphoramidite compounds.

With regard to independent claim 22, the Office Action asserts that the PTBD solid phases suggested in Xu can reasonably be considered to correspond to a base immobilized on a solid phase. Xu suggests using polymer supported base for deprotonation of phenols and as

scavengers for trapping unreacted excess starting phenol. Thus, Xu cannot reasonably be considered to be analogous art nor to be pertinent to the instant subject matter.

The applied citations to Moloy and Treciak are relied on for suggesting that Jackstell was not the first to prepare 1-pyrrolylphosphorus ligands nor the first to use such ligands for catalytic hydroformylation reactions. Billig is relied on for suggesting that it was known in the art to stabilize hydroformylation catalysts. Moloy, Treciak, and Billig are not applied in a manner to cure the deficiencies of Jackstell, Ahlers, Dennis, and Leung discussed above.

Claims 2-8, 10-12, 14, and 16-20 are in condition for allowance for their respective dependence on allowable claims 13 or 21, as well as for the separately patentable subject matter that each of these claims recites.

In view of the above, Applicants believe the pending application is in condition for allowance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 22-0185, under Order No. 13111-00038-US1 from which the undersigned is authorized to draw.

Dated: February 22, 2011

Respectfully submitted,

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First Named Inventor Rainer Papp et al.								
Art Unit 1626	Examiner J. M. Nolan							

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

Note: No more than five (5) pages may be provided.

I am the

applicant /inventor.

/Georg M. Hasselmann/
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February 22, 2011

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.*

*Total of 1 forms are submitted